CHAPTER 13
PERFORMANCE OUTCOMES

Overview

As discussed in Chapter 1, this document incorporates a performance-based planning approach that includes a strategic vision and direction and a process to evaluate the effectiveness of the plan's implementation. This chapter provides detail on the process and outcomes of performance measures used to evaluate the plan.

The performance measures outlined in this chapter are organized by the six overarching goals of the Transportation Policy Plan, detailed in Chapter 1, which are:

- Transportation System Stewardship
- Safety and Security
- Access to Destinations
- Competitive Economy
- Healthy and Equitable Communities
- Leveraging Transportation Investments to Guide Land Use

These six goals are supported by 20 regional objectives listed in Chapter 1. Objectives are more specific and achievable in the short term than goals and give direction to how the goals may ultimately be achieved. Objectives are also used to inform the specific Strategies and Actions the Metropolitan Council and its partners will employ to achieve the Transportation Policy Plan Goals and Objectives. The strategies are listed in Chapter 2. Performance measures are intended to be clear, quantifiable metrics that convey whether the region is achieving its goals, and which goals are not being fully met, and therefore need additional emphasis and resources.

The performance measures included in this chapter can be broadly characterized as fitting into one of the following two categories:

- **Required federal performance measures** that are tracked and must be reported upon on a regular basis. The Metropolitan Council is required to set short-term performance targets for these performance measures. The results of these measures are primarily concerned with the overall trend and whether this trend is meeting the desired expectations. These performance measures are important in that if a measure is not trending towards achieving the target, federal funds may need to be re-directed to address the problem.
- **Regional performance measures** that directly support the Transportation Policy Plan's goals and objectives. These measures are tracked regularly to ensure they are consistent with the desired outcomes as defined by the goals and objectives. Additionally, many of these performance measures are modeled for 2040 conditions and provide a tool to guide the actions the region could take to achieve the desired system vision. The establishment of

specific, quantifiable targets for these measures is included as a future work program item for the Metropolitan Council.

The specifics of both the federally required performance measures and the regional performance measures are outlined in the following sections.

Federally Required Performance Measures

Federal law (23 CFP 490.29) requires all state Departments of Transportation and Metropolitan Planning Organizations (MPOs) to adopt a performance-based program to measure system performance and set performance targets that monitor progress toward achieving the plan's goals. The federally required performance measures are divided into the following ~~four~~ five categories:

- Safety Performance Measures (PM1)
- Pavement/Bridge Performance Measures (PM2)
- System Performance Measures and Congestion Mitigation and Air Quality~~-~~ (PM3); ~~and~~
- Transit Asset Management (TAM); and
- Transit Safety Performance.~~,~~

For each of the non-transit performance measures, the state (through the Minnesota Department of Transportation) has a required deadline to set a statewide target. After the state sets a performance target, the MPO has 180 days to either concur with the DOT's statewide target or set a different target that is specific for its region. Targets for the safety performance measures ~~and transit asset management~~ are set annually, while ~~all~~ other targets are set ~~on a four-year basis with the option to adjust after two years~~on different schedules. Table 13-1 details the regional~~,~~ ~~federal~~ targets adopted by the Metropolitan Council for the federal performance measures.

The federally required performance measures have been woven into the TPP's goals, objectives, and strategies framework and are incorporated into the performance measures included within this chapter. Each measure directly supports one or more of the goals and objectives of the plan, and the recent trends corresponding with the specific measure have been included in the tables of this chapter. The following table details the performance measures required for the four federal performance monitoring programs and the applicable targets.

Table 13-1 – Federal Performance Measures and Adopted Targets

PM1

Final rule	Measures	Adopted targets – ~~2019~~2020
Safety Performance Measures~~/HSIP~~	1. Number of fatalities	Number of fatalities: ~~108~~106
	2. Rate of fatalities (per 100 million VMT)	Fatality rate: 0.34 per 100 million VMT
	3. Number of serious injuries	Number of serious injuries: ~~748~~738
	4. Rate of serious injuries (per 100 million VMT)	Serious injury rate: 2.3~~7~~6 per 100 million VMT
	5. Number of non-motorized fatalities and serious injuries	Non-motorized fatalities/serious injuries: ~~190~~ 181 total ~~(27 fatalities; 163 serious injuries)~~

Annual reporting and target setting

PM2

Final rule	Measures	Adopted targets 2020	Adopted targets 2022
Bridge / Pavement Performance Measures	1. % NHS bridges by deck area in good condition	>50%	>50%
	2. % NHS bridges by deck area in poor condition	<4%	<4%
	3. % of interstate pavement in good condition	No target	>55%
	4. % of interstate pavement in poor condition	No target	<2%
	5. % of non-interstate NHS pavement in good condition	>50%	>50%
	6. % of non-interstate NHS pavement in poor condition	<4%	<4%

2- and 4- year targets

PM3 – Non-CMAQ

Final rule	Measures	Adopted targets 2020	Adopted targets 2022
System Performance	1. % of reliable person-miles traveled on the interstate	>70%	>70%
	2. % of reliable person-miles traveled on non-interstate NHS	>75%	>75%
	3. % of interstate system mileage providing for reliable truck travel time	<2.20	<2.20

2- and 4- -year targets for interstate

4 year targets for non-interstate

PM3

Final rule	Measures	Adopted targets 2020	Adopted targets 2022
CMAQ (Metro Aarea Oonly)	1. On-road Mobile Source Emissions measure. Sum of emissions reductions of pollutants, in kilograms per day, for all projects funded with CMAQ funds.	>6,800	>6,800
	2. Non-Single Occupancy Vehicle measure. Percent of regional travel by non-SOV modes.	>25%	>25%
	3. Peak-Hour Excessive Delay. Measurement of annual hours of excessive delay per capita. Excessive delay is defined as travel below 20 miles-per-hour or 60 percent of the posted speed limit during peak travel hours (6 a.m. to 10 a.m. and 3 p.m. to 7 p.m.	no target	<8.5

2- and 4- year targets while designated nonattainment/maintenance.

~~Only 4 year if in attainment – anticipated in November of 2019~~

TAM

Final rule	Measures	Adopted targets – 2019
Transit Asset Management	1. Rolling Stock (revenue vehicles): % exceeding useful life, by vehicle type	Rolling Stock: % Exceeding Useful Life 1. Articulated bus: 8% 2. Bus: 2.4% 3. Cutaway: 14% 4. Light Rail Vehicle: 0%
	2. Equipment (non-revenue): % exceeding useful life, by vehicle type	Equipment: % Exceeding Useful Life 1. Automobiles: 42% 2. Trucks/other rubber tire vehicles: 38%
	3. Facility: % rated below a 3 on condition scale, by facility type	Facility: % Rated Below 3 on Condition Scale 1. Passenger/parking facilities: 0% 2. Administrative/maintenance facilities: 0%
	4. Infrastructure: % of track with performance restrictions	Infrastructure: % of Track with Performance Restrictions 1. Light Rail: 1%

Annual Reporting and Target Setting **Required for Transit Providers**

Final rule	Measures	Adopted targets
Transit Safety Performance	1. Total number of fatalities	Target adoption required for MPO by 2021
	2. Rate of fatalities per total vehicle revenue miles	Target adoption required for MPO by 2021
	3. Total number of injuries	Target adoption required for MPO by 2021
	4. Rate of fatalities per total vehicle revenue miles	Target adoption required for MPO by 2021
	5. Total number of safety events	Target adoption required for MPO by 2021

Final rule	Measures	Adopted targets
	6. Rate of safety events per total vehicle revenue miles	Target adoption required for MPO by 2021
	7. Reliability: mean distance between major mechanical failures by mode	Target adoption required for MPO by 2021

Per federal requirements, the TPP should include an evaluation of how the system has performed, including the identification of performance trends and the implications. The following sections discuss the current metro area performance for ~~each of the~~the performance measure categories and, as applicable, how performance is trending.

Safety Performance Measures

The region has implemented a number of strategies to improve safety for ~~all~~ users of all modes within the metro area. The strategies include a commitment to aggressively reduce the number of fatal and serious injury crashes annually, with an aspirational goal of achieving zero fatal and serious injury crashes sometime in the future.

Pursuant to federal requirements, the Council must adopt short-range annual highway safety performance targets that are both reasonable and achievable. The Council thus adopted ~~2019~~ 2020 targets that reflect an annual reduction from the base-year data for fatal and serious injury crashes, as shown in Table 13-1. ~~While the methodology used to determine the targets is the same as that employed by MnDOT for the state as a whole, it~~For 2020, the Council ~~is~~ applied a reduction from the 2019 targets for~~to~~ the metro area in order to produce ~~a~~ target~~s~~ that is specific and meaningful for the region.

~~Between 2015 and 2016 there was a significant change in the way that serious injury crashes were reported. In 2015 and all years prior, only confirmed serious injuries were recorded and included in the serious injury crash total. This changed in 2016, where the definition of serious injury crashes was expanded to include both confirmed serious injuries and suspected serious injuries. As a result, the number of bike/ped serious injuries reported in the metro area increased by 63% between 2015 and 2017. Critically, the 2018 metro-area bike/ped targets were based upon the lower 2015 data, which only included confirmed serious injuries. The 2019 bike/ped targets reflected the new definition for serious injury crashes and included both confirmed and suspected serious injuries. As a result, the metro area's bike/ped target increased from 2018 to 2019. This is anticipated to be one-time adjustment, as moving forward the definition of serious injury crashes will continue to include both suspected and confirmed serious injuries.~~

The ~~2019~~ 2020 non-motorized target~~s~~ reflect~~s~~ a 5% annualized reduction in fatalities from the 2017 base-year data and a 6% annualized reduction in serious injuries from the 2017 base-year data. In total, there were 214 non-motorized serious injuries and fatalities in the metro area in 2017.~~, 30 of which were fatalities and 184 of which were serious injuries.~~ This contrasts sharply with the 2015 base-

year data in which the 2018 targets were set, when there was a total of 131 combined non-motorized serious injury crashes and fatalities in the metro area.

Overall, there are significantly fewer fatal and serious injury crashes per capita and a lower crash rate in the metro than in Greater Minnesota. The fatal crash rate in the metro area is approximately half of that of Greater Minnesota, while the serious injury rate is approximately 35% lower.

From ~~2018~~ 2017 to ~~2019~~2018, the total number of fatal crashes, serious injuries, and non-motorized fatalities and serious injuries ~~increased~~ decreased within the metro area. Similarly, the rate of fatal and serious injury crashes, which accounts for vehicle miles travelled, also ~~increased~~decreased. The Council will continue to monitor and report upon these safety measures on an annual basis, which ~~should~~ will assist in determining whether these changes prove to be ~~increase was~~ an outlier or part of a larger trend.

Pavement and Bridge Performance Measures

The Council chose to concur with MnDOT and apply the statewide bridge and pavement targets in the metro area. The targets were adopted for the first time in 2018 and coordinated closely with MnDOT. Overall, performance for the bridge and pavement measures was similar in the metro area to Greater Minnesota as a whole.

Currently, the percent of NHS bridges whose deck area is in good condition is lower in the metro area than the adopted 2020 and 2022 targets. This is offset, however, by the state-wide condition, which is on track to meet the established targets. Bridge deck condition can fluctuate significantly from year to year, and one major bridge project has the potential to skew the overall performance. While this is likely the case within the metro area, the existing performance will be closely monitored and may indicate a need to place a greater emphasis on bridge deck condition within the region over the coming years.

Regarding pavement, while Interstate pavement condition within the metro area is performing at a level greater than the targets, non-Interstate NHS pavement is not performing ~~at the same level~~as well. This may indicate a need to focus more explicitly on non-Interstate NHS facilities in the future in an effort to ensure the region continues to be on track to meet the 2020 and 2022 targets.

System Performance Measures

Due to the more urbanized nature of the metro area as opposed to the more rural character of Greater Minnesota, the Council adopted system performance measures for system reliability that are specific to the region. The existing metro area performance for the percent of reliable person-miles traveled on the interstate system is approximately 69%. MnDOT established a state-wide target of greater than 80%, which would likely be unattainable for the near-term future within the metro area. Instead, the Council has adopted a 2020 and 2022 target of greater than 70%. This target is appropriate in that it still aspires to be better than current conditions, but is more attainable than the statewide target of 80%.

In addition to the interstate reliable person-miles target, the Council has also elected to adopt targets that are different than MnDOT for the truck travel time reliability index measure. This is due to the fact

that the reliability of truck travel is lower in the metro area than in Greater Minnesota as a whole. The adopted MnDOT target of less than 1.5 would be very difficult to attain given the traffic levels in the metro area as compared to Greater Minnesota.

All of the adopted reliability targets aim for improvement over the existing conditions, and as such may be considered aspirational given recent trends. There is, however, no consequence to the region for not meeting these targets, and the State of Minnesota as a whole is likely to meet the statewide adopted targets. The Council has chosen these targets as a mechanism to work towards improvement in both the near- and long- term future.

Congestion Mitigation and Air Quality (CMAQ) Performance Measures

CMAQ measures are unique in that they only apply to areas which are not in full air quality attainment and the targets must be jointly agreed to by both the Council and MnDOT. As such, the Council worked closely with MnDOT staff to set the 2020 and 2022 CMAQ measures shown in Table 13-1.

On-road mobile source emissions reductions can vary considerably from year to year, as they reflect the result of projects programmed in the Transportation Improvement Plan. Given this, MnDOT and the Council set a target that is similar to the most current year's performance.

The percent of regional travel by non-single occupancy vehicles has been gradually increasing over the past several years, with more residents choosing to carpool, walk, bike, or take transit to and from work. A 2020 and 2022 target of greater than 25 percent will be difficult for the region to attain, but reflects the TPP's vision of travel via multiple modes and decreased single-occupancy vehicle use.

Peak-hour excessive delay measures "excessive delay," or delay in which vehicles are travelling at either less than 20 miles per hour or less than 60% of the posted speed limit. Excessive delay is a significant mobility concern within the metro area and affects the Access to Destinations goal of the TPP, among others. The most recent metro area performance showed that there was an average of 8.65 annual hours of excessive delay for each resident of the metro area. The adopted target was set to improve upon this number, with no more than 8.5 hours of peak hour excessive delay per capita in both 2020 and 2022.

Transit Asset Management Performance Measures

Transit asset management (TAM), a best practice and a requirement under federal law, is a business model that prioritizes funding decisions based on the condition of transit assets. Transit providers are required to assess, track, and report on their assets to FTA, and develop annual targets for asset management to ensure a state of good repair. Transit providers also develop transit asset management plans that document implementation actions for asset management within their transit systems. Initial TAM targets must be coordinated with the Council, which is the region's MPO. The four FTA-required performance measures for transit asset management are:

- Rolling stock (buses and train used for serving customers): The percentage of revenue vehicles (by type) that exceed the useful life benchmark.

- Equipment (vehicles used in a support role): The percentage of non-revenue service vehicles (by type) that exceed the useful life benchmark.
- Facilities: The percentage of facilities (by group) that are rated less than 3.0 on the Transit Economic Requirements Model (TERM) Scale.
- Infrastructure: The percentage of rail track segments (by mode) that have performance restrictions. Track segments are measured to the nearest one-hundredth of a mile.

The region's transit operators officially established 2018 performance targets on April 1 of 2018, which are shown in Table 13-1. These targets were consequently adopted by the Council, serving as the region's MPO, ~~-~~in October of 2018. The Federal Transit Administration (FTA) does not require MPOs to adopt regional TAM targets on an annual basis.

The TPP outlines the goals, objectives, and strategies that are used to set transit investment priorities for the region. These factors, in turn, directly guide the investment plan and transit projects programmed and ultimately built. The TPP guides transit investments through the following objectives and strategies:

- Efficiently preserve and maintain the regional transit system in a state of good repair;
- Manage the regional transit network and respond to demand as deemed appropriate based on the Transit Market Area;
- Provide transit police services and coordinate with other public safety agencies to ensure the safety and security of the transit system;
- Promote alternatives to single occupant vehicles and ensure transit services reach major job and commercial activity centers;
- Expand and modernize transit service, facilities, systems, and technology to meet demand, improve customer experience, and increase transit access to destinations.

Regional Performance Measures

As previously noted, in addition to the federally required measures, the performance measures within this chapter also include several measures to evaluate the desired outcomes of this Transportation Policy Plan. These performance measures reflect the long-term vision for the region and serve as indicators to track the region's progress towards achieving the goals and objectives of this Plan. Some of the performance measures can be evaluated using horizon year 2040 model outputs for the revenue scenarios outlined in this Transportation Policy Plan, while others are intended to reflect and track current conditions and assess whether the region is making progress towards meeting the 2040 system vision.

The regional performance measures were chosen after meetings and input from Metropolitan Council stakeholders and the public. ~~The~~ ~~P~~previous versions of the 2040 Transportation Policy Plan~~, adopted in 2015, included~~ include a work item with the task of refining the planning and programming performance measures. Comments received from the public outreach process for that plan indicated that the plan goals, objectives and strategies, their inter-relationship, and the related performance measures needed further review.

This work item was implemented through the formation of five modal work groups: highway, transit, freight, aviation, and bicycle/pedestrian. Membership in these work groups included representatives from cities, counties, MnDOT, transit providers, the University of Minnesota, the Minnesota Department of Health, the Metropolitan Airports Commission, and Metropolitan Council staff. The work groups also included representatives of advocacy groups such as Saint Paul Smart Trips, Minneapolis Bicycle Coalition, Transportation Accessibility Advisory Committee (TAAC), the American Trucking Association, and Transit for Livable Communities.

These modal work groups met throughout 2015 to develop recommendations for the performance measures to be used in the 2040 Transportation Policy Plan. Their task was to develop additional or replacement plan performance measures. In recommending performance measures, the work groups considered the availability of data and other factors. The groups developed a list of measures, which were prioritized based on their relationship to the plan's goals and objectives. Those performance measures with strong relationships are used in this plan and outlined in this chapter.

Modeling Process

Where possible, and for those performance measures where a long-term result was desired, the process utilized the regional travel demand model to provide estimates for the expected 2040 results under two different investment scenarios, as well as a "no build" scenario. The scenarios are described below.

- **Current Revenue Scenario.** This scenario accounts for the assumption that all revenues that the region can reasonably expect to be available will continue to be available at the same level (accounting for inflation) until the horizon year of 2040. It is a fiscally constrained scenario that is based on historical funding levels, current laws, and current allocation formulas. The estimated revenues available under this scenario total approximately $92.1 billion dollars.
- **Increased Revenue Scenario.** This scenario is premised on the region adopting policy changes, laws, or decisions that increase local, state, or federal funding levels. It is a scenario based on plausible reason and illustrates what may be achieved with additional revenues. While the projects are not considered part of the approved plan, this scenario provides context for the level of transportation revenues and investments needed to move the region closer to achieving the transportation goals and objectives of this plan.
- **"No Build" Scenario.** This scenario presents the modeled conditions of the region under the assumption that no projects are built after the 2015 base-year condition. This represents the expected conditions should no transportation improvement be made from 2015 to 2040.

All future scenarios assume the same assumptions for demographic growth in the region, with population in the region increasing from 2,973,000 in 2015 to ~~3,640,000~~3,653,000 in 2040 and total employment increasing from 1,620,000 to~~ 2,070,000~~2,016,000. This represents a total increase of 23~~2~~% and 24~~8~~% increase in population and employment, respectively. Note that the demographic forecasts used for the travel demand modeling process differ slightly from the Metropolitan Council's

regional forecast for 2040. The demographic projections used for the travel demand model are based upon the local forecasts and summed for all traffic analysis zones (TAZs) in the metro area.

Performance Measure Outcomes

The following tables, which are categorized by the overall goals of this Transportation Policy Plan, list each performance measure chosen for this plan and, if applicable, their modeled outcomes based upon the three scenarios. The tables include the following information:

- The performance measure
- A description of the performance measure
- The applicable geography or transportation network that is being measured
- The existing performance
- The 2040 outcomes for each model scenario, if applicable

Note that not all performance measures have associated model outputs. In these cases, the table includes an outcomes column that provides additional information pertaining to the desired long-term outcomes.

Transportation System Stewardship

Transportation System Stewardship – Sustainable investments in the transportation system are protected by strategically preserving, maintaining, and operating system assets.

The transportation system that exists at any given time needs to be maintained and operated. The priority is to keep the system in working order and maximize its potential in terms of effectively and efficiently moving people and freight. Keeping up a well-maintained, functional transportation system is at the core of transportation investment.

Table 13-2: Transportation System Stewardship Performance Measures

Performance Measure	Description	Existing Performance	Outcomes
Roadway Pavement Condition	**Percentage of pavement with a ride quality in good and poor condition** • Interstate System – Good • Interstate System – Poor • Non-Interstate NHS – Good • Non-Interstate NHS – Poor	 63% 1.4% 51% 3.2%	Federally required short term targets. Council has work program item to develop long-term outcomes with MnDOT.
Bridge Condition	**Percentage of bridges (expressed in deck area) in good and poor condition** • Interstate and NHS – Good • Interstate and NHS - Poor	 46% 1.3%	Federally required short term targets. Council has work program item to develop long-term outcomes with MnDOT.
MnPASS Reliability	**Percent of time MnPASS lanes are operating at 45 mph or greater**	93.3%	Will be managed to be as close to 100% as possible
Transit State of Good Repair	**Percent of assets in good repair** • Rolling Stock: Revenue Vehicles • Equipment: Service Vehicles • Facilities: Customer and Maintenance/Administrative • Infrastructure: Rail Track	Annual targets set in accordance with adopted asset replacement policies	Federally required annual targets. Long-term outcomes will not be developed for this measure

Transportation System Stewardship Outcomes Summary

Three of the four performance measures included under this goal are federally mandated, with the Council required to set performance targets (or concur with ~~the~~ MnDOT or transit provider targets) and report upon the trends toward that target on a regular basis. These performance measures and their

applicable targets will be included in the next update to the Transportation Policy Plan, per the schedule for federal requirements.

The Federal Highway Administration has set minimum performance requirements for both pavement and bridge condition at the state level. For roadway pavement condition, this minimum standard is that no greater than 5% of the total state-wide interstate system should be in poor condition. There is no performance threshold for the non-Interstate portion of the National Highway System (NHS). The minimum standard for bridge condition (including both Interstate and non-Interstate NHS) is no greater than 10% should be in poor condition.

Overall, the State of Minnesota's Interstate pavement condition is currently about 60% good and 1% poor. The state's non-Interstate NHS condition, meanwhile, is approximately 53% good and 2.5% poor. When compared to the state as a whole, the metro area has less non-Interstate pavement in good condition, and more non-interstate pavement in poor condition. In contrast, the state-wide interstate pavement condition is slightly worse than the metro area's.

The metro area's bridge condition performance, which is defined as the total deck area of bridges along Interstate and NHS systems in good and poor condition, closely mirrors the overall state performance. This is in large part due to the fact that ~~since~~ approximately 75% of the total bridge deck area in Minnesota is located within the metro area. The metro area's overall bridge condition is 46% in good condition and 1.3% in poor condition. The state, by contrast, is approximately 47% in good condition and 1.5% in poor condition.

The MnPASS system continues to operate efficiently, with the system speed historically averaging greater than 45 miles per hour over 93~~5~~% of the time. This is a key metric to continue to track in the future, given the reality of limited resources for roadway expansion and the importance of the MnPASS system to providing a reliable alternative to congestion. MnPASS lanes are anticipated to continue to operate reliably, as the region can set prices in order to control volume and ensure the lanes operate at a consistent speed.

Transit asset management targets are set on an annual basis by regional transit providers and must be officially adopted by the MPO 180 days after the initial~~se~~ targets are set. These targets reflect the expected conditions of transit assets by the conclusion of the year when they are set. ~~For example, the 2018 targets are based on a reasonable expectation of the state of the system at the end of 2018~~.

Safety and Security

Safety and Security – The regional transportation system is safe and secure for all users.

In order for the transportation system to function well, it needs to be safe and secure. Safety and security are not only essential to protect life, but also to instill confidence in users of the system. Every investment in the transportation system should strive to make it safer and more secure for the user.

Table 13-3: Safety and Security Performance Measures

Performance Measure	Description	Existing Conditions	Outcomes
Crashes with Fatal or Serious Injuries	**Number of Fatal or Serious Injury Crashes** • Fatal Crashes • Serious Injury Crashes	 141 825	Federally required ~~2018~~ 2020 targets shown in Table 13-1. Long-term outcomes cannot be reasonably developed for these measures.
Fatal and Serious Injury Crash Rate	**Rate of Crashes per 100 million vehicle miles traveled** • Fatal Crashes • Serious Injury Crashes	 0.49 2.88	
Bicycle/Pedestrian Fatal or Serious Injury Crashes	**Number of Fatal or Serious Injury Crashes**	 184	

Safety and Security Outcomes Summary

The measures in Table 13-3 outline the federally required measures and the current performance for the metro area.

The metro area's rate of fatal and serious injury crashes is ~~significantly~~ lower than that of the state as a whole. In ~~2015~~2018, the metro area's rate of fatal crashes was 0.49 crashes per 100 million vehicle miles travelled. The State of Minnesota's rate (including the metro area) was 0.63 per 100 million vehicle miles travelled., ~~nearly double that of the region~~. Serious injury crash rates were similarly disproportional, with the metro area rate significantly lower than the state as a whole.

Recent serious injury and fatal accident rates have been ~~notably~~ lower than in past decades. This can likely be attributed to safety improvements to automobiles as well as continued safety engineering improvements to the roadway system.

~~Unlike overall fatal and serious crashes, n~~Non-motorized crash trends ~~have been fairly stable over the past few decades,~~have been increasing within the metro area within recent years, with a significant spike since 2015. ~~with some fluctuations from year-to-year~~. This is due in large part, however, to the change in the definition of "serious injury" crashes, which changed between 2015 and 2016. Previously, only confirmed serious injuries were reported. Starting in 2016, the definition changed to encompass both confirmed and suspected serious injury crashes. Nonetheless, the Council will

continue to proactively monitor, develop solutions, and program projects that help to increase the safety of pedestrians and bicyclists.

Crashes involving pedestrians represent the majority of non-motorized crashes, both within the metro area and nationally. Although recent trends indicate increased travel by pedestrians and bicyclists, the lack of a significant reduction in fatal or serious injury crashes involving these travelers is a cause for concern, given the reductions seen for overall fatal and serious injury crashes. The region will need to continue to improve bicycle and pedestrian safety as these modes continue to grow in use.

Given the many uncertainties surrounding future technologies (e.g. the potential introduction of automated vehicles), it's not plausible to accurately forecast 2040 conditions for these measures. Research strongly suggests that that safety conditions will continue to improve by 2040 due to technological improvements, roadway geometry improvements, and other factors.

Access to Destinations

Access to Destinations – A reliable, affordable, and efficient multimodal transportation system supports the prosperity of people and businesses by connecting them to destinations throughout the region and beyond.

Transportation is fundamentally about providing access to destinations, the places where people and goods need to go. People choose destinations based on the ease of access, whether that relates to cost, their trust that the system will work reliably, or the transportation mode that might be able to get them there. When access is possible, other factors will also affect how people choose to get to destinations, such as the travel time, reliability, comfort, and safety of the trip. Travel preferences can vary widely across people and transportation modes.

Table 13-4: Access to Destinations Performance Measures

Performance Measure	Description	Existing Performance	2040 No Build	2040 Current Revenue Scenario	2040 Increased Revenue Scenario
Access to Jobs	**Number of jobs accessible within 30 minutes and percent increase compared to "2040 No Build"**				
	• Driving	1,038,957	1,229,954	~~1,261,075~~1,257,141	1,283,115
	• Percent Increase	N/A	N/A	2.~~5~~5%	4.2%
	• Transit	24,574	29,121	3~~2~~21,008~~950~~	32,733
	• Percent Increase	N/A	N/A	9.~~7~~9%	12.4%

Performance Measure	Description	Existing Performance	2040 No Build	2040 Current Revenue Scenario	2040 Increased Revenue Scenario
MnPASS Usage	**Average daily number of people in MnPASS lanes**	93,000	99,000	~~288,000~~300,496	614,000
Percent Non-Single-Occupant Vehicle Travel	**Percent of all trips using modes other than non-single occupancy vehicles**	23%	TBD*		
Transit Ridership	**Increase in daily transit ridership**	315,000	+74,000	+145,000	+185,000
Modal Participation Rate	**Percent of people who use these modes at least once on a typical day** • Transit • Bicycle • Walk	6.2% 3.6% 11.2%	TBD* TBD* Ongoing tracking by the Travel Behavior Inventory		
Travel time Reliability	~~**Ratio of longer to normal travel times**~~Percentage of person-miles traveled in reliable conditions~~, in percent of total person-miles travelled~~ • Interstate • Non-Interstate NHS	~~68.8~~69.5% 79.6~~6~~.5%	Ongoing tracking and reporting		
Peak Hour Excessive Delay	**Number of hours of excessive delay** (travel at less than 20 MPH or 60% of posted speed limit) per capita	8.65	Federally required short-term target Ongoing tracking and reporting		

Performance Measure	Description	Existing Performance	2040 No Build	2040 Current Revenue Scenario	2040 Increased Revenue Scenario
Aviation Performance	**Average aircraft delay per operation at MSP International Airport** (minutes)	4.3	Ongoing tracking and reporting		
Regional Bicycle Transportation Network (RBTN) Implementation	**Percent of RBTN with fully constructed facilities**	47%	Ongoing tracking and reporting		

*** A methodology for calculating this measure will continue to be developed and these outcomes will be included in future plans.**

Access to Destinations Outcomes Summary

The Access to Destinations goal features a number of performance measures, all of which are important indicators for the overall effectiveness of the transportation network in helping to provide reliable, affordable, and efficient travel options for a diverse range of metro area residents. This goal also contains many performance measures in which 2040 outcomes for the three investment scenarios have been developed. This allows the region to better understand the tangible impacts investment decisions may have on the regional transportation network.

The ability for residents to access jobs in a timely manner is a key for a healthy and competitive economic environment. Currently, just over 1 million jobs are located within a 30-minute drive for the typical resident. Without any additional investments, this number will increase to approximately 1.2 million by 2040 based on the addition and location of forecasted job growth. Job access within a 30-minute drive in 2040 would increase by 2.2~~5~~% for the current revenue scenario and 4.2% for the increased revenue scenario compared to the no build scenario. The number of jobs accessible within 30 minutes by transit is anticipated to increase by a higher percentage, 9.9~~7~~% for the current revenue scenario and 12.4% for the increased revenue scenario, though the overall number of jobs accessible within a 30-minute transit trip is still far less than driving. The increase in access to jobs can be attributed not only to a more robust transportation network, but also due to changes in the distribution of people and jobs over the next few decades.

The results of modeled MnPASS use vary considerably depending on the investment scenario. The current revenue scenario forecasts a significant increase in MnPASS usage as compared to the no-build scenario, with daily person through-put nearly doubling. Under the increased revenue scenario, MnPASS usage increases greatly over 900% from the no-build scenario. This suggests that the construction of additional MnPASS lanes dramatically affects usage within the region.

Transit ridership is anticipated to rise under both the current and increased revenue scenarios. Under the current revenue scenario, transit ridership would increase by 74,000 over the no build scenario. The

increased revenue scenario would show an even more dramatic rise, with approximately 185,000 additional daily trips representing 250% growth from current conditions.

The remaining performance measures shown in Table 13-4 do not have calculated model outputs because most of these measures are dependent on economic or other variables that cannot be predicted at this time by the travel demand model. As indicated, these performance measures will be tracked on a regular basis to ensure the region's investment and transportation priorities are having their intended effect.

Competitive Economy

Competitive Economy – The regional transportation system supports the economic competitiveness, vitality, and prosperity of the region and state.

A well-developed and functioning transportation system is a significant attractant to worldwide business and talent. It also helps the region retain existing businesses and residents, allowing them to thrive in current and future work environments by supporting efficient movement.

Table 13-5: Competitive Economy Performance Measures

Performance Measure	Description	Existing Conditions (2015)	2040 No Build	2040 Current Revenue Scenario	2040 Increased Revenue Scenario
Air Travel	**Fee per passenger that airlines pay MAC to use MSP**	$6.32~~17~~	Ongoing tracking and reporting		
Access to Transit	**Population that lives within 1/2 mile to high-frequency transit corridors** • Population within 1/2 mile • Percent of total population	569,000 17%	658,000 18%	904,000 25%	1,107,000 30%
Freight Reliability	**Truck travel time reliability on the Interstate System**	2.23	Federally required short term target Ongoing tracking and reporting		

Competitive Economy Outcomes Summary

The fee per passenger at MSP International Airport is an important indicator to track to ensure the metro area remains competitive with peer regions. It has been relatively consistent over time and compares favorably to other U.S.-based airports of a similar size.

Access to transit is a way of assessing how the region is improving opportunity for residents and providing a transit system that can attract and retain businesses and residents. A more robust transit system allows the metro area to compete with other regions across the nation. High-frequency transit is a very attractive option that is convenient for potential users of the system, particularly users who believe transit to be integral to their economic prosperity. Currently, about 17% of people live near the high-frequency transit network of buses and light rail. By 2040, the no build scenario would see additional individuals living near high-frequency transit service. This is due to people moving closer to current high-frequency transit service lines. In both the current and increased revenue scenarios, more people are served due to not only the clustering of people near existing lines, but also the construction of new lines serving areas of the region not currently supported by high-frequency transit service.

Freight reliability, the percent of the Interstate system that provides for reliable truck travel time, is both a federally required measure and a key indicator for ensuring the metro area's transportation network is sufficiently accommodating the movement of freight. This measure is calculated by comparing the ratio of longer travel times to "normal" travel times for 5 different time periods over 24 hours. The existing conditions have been relatively stable over time, though freight reliability is worse in the metro area than in greater Minnesota.

Healthy and Equitable Communities

Healthy and Equitable Communities – The regional transportation system advances equity and contributes to communities' livability and sustainability while protecting the natural, cultural, and developed environments.

The transportation system can be the catalyst for improving communities, but it can also contribute negatively to communities. The transportation system needs to contribute to the health and vitality of all communities, including protecting and enhancing existing communities and their cultures as well as future communities and cultures.

Performance Measure	Description	Existing Conditions (2015)	2040 No Build	2040 Current Revenue Scenario	2040 Increased Revenue Scenario
Bike and Pedestrian Miles Travelled	**Total miles travelled** • Bicycle • Pedestrian	384,250 239,236		Not currently forecastable	

Performance Measure	Description	Existing Conditions (2015)	2040 No Build	2040 Current Revenue Scenario	2040 Increased Revenue Scenario
Vehicle Miles Travelled Per Capita	**Daily average vehicle miles travelled for a metro area resident**	23.9	23.4~~3~~	23.3	23.5
On-Road Mobile Source Emissions	**Amount of CO2, nitrogen, sulfur dioxide, VOCs, and CO emissions**				
	CO (pounds)	718,000	293,000	288,000	304,000
	Nitrogen Oxides (pounds)	85,000	16,700	16,500	17,400
	Sulfur Dioxide (pounds)	474	354	340	355
	VOCs (pounds)	19,410	6,100	5,800	6,100
	CO2 Equivalent (pounds)	68,930,000	51,100,000	49,000,000	51,200,000

Healthy and Equitable Communities Outcomes Summary

The total bicycle and pedestrian miles travelled are an important indicator for the overall livability and sustainability of the region as well as contributing to the health of the region's residents. The data also sheds light on the accessibility of the region's bicycle and pedestrian network to individuals within the region. The data in Table 13-5 is from 2010 and trend data for the region is not yet available, but it will be updated with more current data once available. This measure is important to track on a regular basis but cannot be forecasted for 2040.

Analysis on vehicle miles travelled (VMT) per capita is a way of understanding how the region's investments and development patterns are impacting overall livability. When people are driving further, there are implications for the environment (beyond just air quality), the economic viability of travel and related equity of access, the potential for fatal and serious crashes, and wear and tear on the region's transportation infrastructure. For these reasons, VMT per capita can be a proxy for measures in other goals that cannot be forecasted through the regional travel demand model.

VMT per capita decreases slightly from current conditions under all three modeled scenarios, with the increased revenue scenario showing the region with the highest VMT levels. However, due to the increase in population and assuming similar single-occupancy vehicle rates, this would likely lead to more vehicles on the roadways. This would have an effect on congestion and reliability in the no build scenario, as the possible lack of capacity expansion to handle the increased number of vehicles could potentially overwhelm the existing roadway system.

The increased revenue scenario has a higher overall VMT per capita due in part to the investment in MnPASS lanes. The efficiency provided by the MnPASS system leads to greater usage of the system,

consequently increasing the region's VMT per capita. However, the substantial investment in MnPASS lanes increases system capacity and efficiency, likely leading to reduced congestion and greater mobility than in the no build and current revenue scenarios.

Federal law requires regions in non-attainment or maintenance for air quality report upon on-road mobile source emissions. The monitoring and reporting of air quality is essential in ensuring the air quality within the region is not adversely affecting residents. Total emissions have declined in recent decades, in part due to improved vehicle and bus efficiency and technological improvements to newer vehicles that result in greatly reduced emissions. By 2040, the air quality within the region is anticipated to improve. This is in large part due to a rollover of older vehicles to these newer vehicles with reduced emissions.

Leveraging Transportation Investments to Guide Land Use

Leveraging Transportation Investments to Guide Land Use – The region leverages transportation investments to guide land use and development patterns that advance the regional vision of stewardship, prosperity, livability, equity, and sustainability.

The effective use of land by people and businesses requires a transportation system to access it. Similarly, land use drives the need for the transportation system. The two systems must work together to be effective, and the transportation system can be a catalyst for land use change that will contribute toward achieving the other five goals.

Table 13-7: Leveraging Transportation Investments to Guide Land Use Performance Measures

Performance Measure	Description	Existing Conditions (2015)	2040 No Build	2040 Current Revenue Scenario	2040 Increased Revenue Scenario
Freight Land Use	**Total acreage of land zoned as industrial and located on riverfront or with rail access**	11,839	Ongoing tracking and reporting		
Population and Job Growth Near High-Frequency Transit Service Areas	**Percent of forecasted growth projected to occur within 1/2 mile of high-frequency transit corridors** • Percent Population Increase	N/A N/A	13% 24%	19% 34%	23% 44%

Performance Measure	Description	Existing Conditions (2015)	2040 No Build	2040 Current Revenue Scenario	2040 Increased Revenue Scenario
	• Percent Job Increase				
Transit-Supportive Policies in Local Comprehensive Plans	**Number of communities with comprehensive plans that include transit supportive policies or strategies**	Will develop evaluation process as ~~2018~~ comprehensive plan update process concludes	Ongoing tracking and reporting		

Leveraging Transportation Investments to Guide Land Use Outcomes Summary

The freight land use measure is important to track in order to ensure that the region is preserving sufficient land for freight-focused development adjacent to freight infrastructure. Increasingly, land which has historically been zoned as industrial and vital to the region's freight activities has been converted to residential and commercial uses. This has caused a need for trucks to travel longer distances from distribution centers and freight yards, leading to increased congestion, less efficiency, and greater amounts of on-road mobile source emissions.

As discussed under the competitive economy outcomes summary, high-frequency transit provides a unique option for residents and businesses to access opportunity and talent. In this context, the region is investing in an expanded transit system to provide for more options for residents and businesses, both existing and future. Measuring the growth of jobs and population near high-frequency transit is a way of assessing how much the future will be supported by multimodal options. Current forecasts indicate that 13% of new people and 24% of new jobs would be located near the existing high-frequency transit system by 2040. Building the current revenue scenario would increase this to 19% of new people and 34% of new jobs by 2040, and the increased revenue scenario would increase this to 23% and 44%, respectively.

There are several factors that can affect where growth by 2040 is distributed in the region. The region's local forecasts were developed based on historical data and previous comprehensive plans. The forecasts are also a product of discussions with local communities. It is a challenge for any forecast to capture shifting market trends. For example, from 2010-2015 the region observed 53% of added housing units and 57% of the permit value for commercial and industrial development on previously developed land. When communities were assessing their initial 2040 forecasts, this market trend for redevelopment was unforeseen in some communities. The region will be assessing and updating forecasts as more recent data becomes available. Local governments are also in the process of updating their 2040 comprehensive plans to reflect Thrive MSP 2040 and its policy plans, which often results to changes in the location and intensity of growth in a community. These factors affect the

existing and future conditions and thus, it is important to track how this measure changes over time for both existing conditions and forecasted plan outcomes.

The Council has made a commitment to monitor the incorporation of transit-supportive development policies and strategies in comprehensive plans throughout the metro area. To accomplish this, the Council will evaluate comprehensive plans submitted during the 2018 planning cycle for transit-supportive elements and track how this evolves over time through amendments and future planning cycles.

Summary of Major Outcomes of Three Scenarios

No build

The no-build scenario presents the outcomes of the region's transportation conditions should no improvements be made to the system between 2015 conditions to 2040. In this scenario, while the region continues to experience population and job growth, the lack of investment in system mobility has clear effects on the level of congestion, access to jobs, transit usage, and system reliability in general. The system is unable to keep pace with the increased level of demand and threatens to affect freight reliability and residents' access to destinations; commute times; and overall quality of life.

Under the no build scenario, transit ridership and the ability to access jobs within 30 minutes do increase, but this is due to increased population density and a predicted development pattern where more individuals settle closer to the urban core of the metro than in existing conditions. The modeled results of MnPASS usage under the no build scenario indicates that the capacity of the existing system is limited in its ability to handle the increased volume of traffic expected by 2040. This would likely cause a policy discussion to increase the maximum MnPASS fee for single-occupancy vehicles. The lack of MnPASS expansion, coupled with per capita VMT figures consistent with current levels, points to a roadway system with rising levels of congestion, lower travel time reliability, and overall reduced mobility for residents of the region.

Current Revenue

Under the current revenue scenario, the region experiences investments in the transit system and the development of MnPASS lanes, leading to an increase in the number of people utilizing these facilities. As a result, system congestion and reliability are predicted to be better than in the no-build scenario, and overall access to the transit system leads to a greater percentage of the population living near high-frequency transit corridors and increased accessibility to jobs. The results of the current revenue scenario indicate that investments to the transportation system make a difference and improve the quality of life for residents living within the metro area.

Compared to the no-build scenario, the current revenue scenario experiences nearly double the transit ridership increase, approximately 10 percent more jobs are accessible within 30 minutes, and over 250,000 more people are located close to a high-frequency transit corridor. Forecasted population and job growth within high-frequency transit corridors consequently increases by six and 10 percent over the no build scenario, respectively.

The investment in the MnPASS system under the current revenue scenario, from 71 to 121 miles, leads to an increase of ~~nearly~~ over 200,000 users over the present conditions. The effect of this investment is likely to lead to greater reliability and reduced travel times for these users. Overall the investments made in the current revenue scenario improve upon the conditions presented in the no build scenario and depict a transportation network that better addresses the increased demand.

Increased Revenue

The increased revenue scenario shows greater positive trends than those illustrated in the current revenue scenario, with increased transit accessibility and a substantial increase in the number of MnPASS lane users. All the trends summarized in the current revenue scenario are further increased, showing that more investment on the transportation network equates to a greater overall impact.

MnPASS lanes receive substantial investment in the increased revenue scenario, with a total of 295 miles of MnPASS lanes in the region. This leads to usage patterns over six times greater than present conditions and double those of the current revenue scenario. This results in slightly higher VMT in the metro area, but also an increase in accessibility to jobs. Daily transit ridership is anticipated to increase by 40,000 over the current revenue scenario and the number of individuals within a half mile of a high-frequency transit route increases over 200,000.

The overall results of the increased revenue scenario reveal a region with reduced congestion, greater accessibility and reliability, and a more efficient transportation network than in the no build and current revenue scenarios. Again, the outcomes show that investments impact many facets of the transportation network, and the more investment the region puts into the network, the greater the impact will be.